The Use of Self-Recording As A Staff Management Technique

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by

Matthew Mark Burg

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THE USE OF SELF-RECORDING AS A

STAFF MANAGEMENT TECHNIQUE

by

Matthew M. Burg

Approved by Committee:

Mary Ann Powers
Chairperson

R. Michael Latta

Dennis W. Reed

Earle L. Canfield
Dean of the School of Graduate Studies

THE USE OF SELF-RECORDING AS A STAFF MANAGEMENT TECHNIQUE

An abstract of a thesis by
Matthew Mark Burg
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Advisor: Mary Ann Powers

The problem. While a variety of management techniques have been utilized to modify staff behavior, there remains to be found an effective cost and time efficient procedure to modify staff behavior on a long term basis.

Procedures. A multiple baseline design in which self-recording was introduced across eight staff members was utilized to evaluate the effects of recording on the rate of staff-resident social interactions with mentally retarded institutionalized individuals. Observations were conducted as well on resident behavior, and resident and ward cleanliness.

Findings. Interactions were found to increase from an average of 7% of all observations to an average of 54% of all observations made during the self-recording condition. Follow-up data provided similar results. Resident inappropriate behavior was found to decrease consistent with the intervention. Resident and ward cleanliness were found not to suffer.

Conclusions. Self-recording was found to be an effective cost and time efficient procedure for modifying staff behavior. The effects of self-recording maintained during follow-up. Increasing social interactions has a beneficial effect on resident behavior. General work load on a ward can be increased without a decrease in ward cleanliness.

Recommendations. Future research should examine the effects of social interactions contingent upon specific resident behaviors. The complex reciprocal interaction between staff and resident behavior should be investigated.

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Recommendations: Future research should examine the effects of social interactions contingent upon specific resident behaviors. The complex reciprocal interaction between staff and resident behavior should be investigated.

CHAPTER I

INTRODUCTION

In recent years, the area of institutional staff management has received considerable research attention. The interest in staff behavior may be due to the documentation of substandard living conditions in institutions (Blatt, 1970; Rivera, 1972), and litigation which has helped define the rights of the institutionalized (Wyatt v. Stickney, 1972; New York State Association for Retarded Children v. Rockefeller, 1973; Donaldson v. O'Connor, 1974). This has prompted considerable progress in the area of program development (Ayllon & Azrin, 1968; Gardner, 1971; Watson, 1972a), however implementation of these new programs has been slow. Successful program implementation requires the development and maintenance of appropriate staff behavior (Kazdin, 1973). While attendant level staff offer a unique source of program agents (Iwata, Bailey, Brown, Foshee, & Alpern, 1976), they are reported to be difficult to train (Iwata, note 1) and have been found to spend as much as 20% to 40% of their time engaged in "leisure activities" (Bernsberg & Barnett, 1966; Iwata et al., 1976).

In-service training has been successful at changing staff behavior in controlled environments (Cochran & Steiner, 1966; Gardner, 1972a, 1972b; Panyan & Patterson, 1974), however the transfer of new skills to the ward environment has generally been small and short lived (Panyan, Boozer, & Morris, 1970; Hollander & Plutchik, 1972; Katz, Johnson, & Gelfand, 1972; Martin, 1972; Quilitch, 1975). More positive results have been obtained through the application of external

contingencies on staff behavior. Money as a reinforcer has been utilized alone (Katz et al., 1972) and in tandem with assignments (Martin, 1972; Pommer & Streedback, 1974), rankings (Pomerleau, Bobrove, & Smith, 1973), and public posting (Patterson, Griffin, & Panyan, 1976). While positive results have been obtained with money, the economic feasibility of such a reinforcer is highly questionable. Similar financial or practical hindrances are related to the use of trading stamps (Bricker, Morgan, & Crabowski, 1972; Hollander & Plutchik, 1972; Hollander, Plutchik, & Horner, 1973) and time off from work (Watson, 1972b; Reid, Shuh-Wear, & Brannon, in press).

A performance based lottery using already available reinforcers has been successful at altering staff behavior (Iwata et al., 1976). While the monetary cost-effectiveness of this procedure is low, the time cost effectiveness in observer time is extremely high. In addition, with this procedure, each staff member is not always in touch with the lottery contingency.

Supervisor feedback and praise are additional low monetary cost methods of behavior change. Quilitch (1975) compared prompts, workshops, and public feedback, and found only public feedback effective as a reinforcer for staff behavior change. Similar data have been obtained by Welsh, Ludwig, Radiker, and Krapfl (1973), Watson, Gardner, and Sanders (1971), Panyan et al. (1970), and Montegar, Reid, Madson, and Ewell (in press). However, Pommer and Streedback (1974) found the effects of publicly posted feedback on staff behavior to taper off quickly. Additional scheduled reinforcement was necessary. Martin (1972) and Pomerleau et al. (1973) similarly found feedback to be less effective

than feedback paired with monetary bonus. Iwata et al. (1976) have speculated that these mixed results may have been due to extraneous variables such as inadvertant pairing of feedback with consequences of a reinforcing or punishing nature. Other problems also exist with the use of supervisor feedback. This feedback can gain stimulus control over the staff behavior thereby reducing the chances of generalization in the supervisor's absence, either from the ward or the specific ward area.

The self-control literature, specifically that involved with self-recording, presents other possible means of altering staff behavior. Kanfer (1970) has conceptualized self-recording as an important component of self-control. In many investigations, it has been utilized as a behavior change technique (Kazdin, 1974), and has been found effective as an accelerating consequence over a wide range of behaviors (Bristol & Sloane, 1974; Broden, Hall, & Mitts, 1971; Glynn, Thomas, & Shee, 1973; Gottman & McFall, 1972; Herbert & Baer, 1972; McKenzie & Rushall, 1974). Self-recording therefore represents a potential means, as yet untested, of increasing specific behaviors on the part of institutional staff.

One problem found in residential facilities for the retarded is a general lack of social interactions. The importance of these interactions has been documented (President's Committee on Mental Retardation, 1974). However, surveys indicate that social interactions between institutional residents and staff account for less than five percent of the resident's time (Daily, Allen, Chinsky, & Viet, 1974). Therefore, social interactions represent a socially valid group of behaviors to increase.

Attendant level staff have been described as having numerous daily responsibilities on the ward (Iwata, note 1). Increasing the number of staff responsibilities might have a detrimental effect on the performance of those responsibilities already part of the staff routine. The caution by behavioral ecologists (Willems, 1974) to investigate the effects upon the total behavior system of changing or adding one behavior in/to that system has to date been minimally heeded in the area of staff management. An appropriate response requires the collection of data based upon the ward staff's execution of their responsibilities (i.e., custodial duties).

The present investigation examined the effectiveness of self-recording by attendant level staff of staff-resident interactions as a means of increasing such interactions. In addition to data on staff behavior on the ward, data was collected on ward and resident cleanliness, and resident behaviors, as a means of determining whether the execution of necessary ward tasks suffered when staff-resident interactions increased. Follow-up data was collected as well, as a means of determining whether behavior change maintained.

CHAPTER II

METHOD

Participants and Setting

Participants in this study were eight direct care staff members in one ward of a state residential facility for developmentally disabled. The staff comprised the entire day shift of attendant personnel on that ward and included four males and four females. Ages ranged from 22 to 50 years (mean 37), educational levels from 10 to 16 years (mean 13), and length of employment at the center from 1 to 10 years (mean 4).

Clients residing on the ward were 45 severely and profoundly retarded (based on traditional psychological evaluations present in the resident's official files) males ranging in age from 14 to 38 (mean 24). Approximately 90% demonstrated independant feeding skills, 20% were toilet trained, and approximately 40% were verbal, though not to a sufficiant degree to engage in conversation.

The ward was selected for several reasons. The ward was recommended by a center administrator when questioned by the experimenter. It had traditionally been a "back ward" area within the institution and received the least amount of professional services. Approximately one year prior to the study, attempts had been initiated to upgrade the services provided and when the experimenter contacted the ward supervisors, they agreed to participate. Prior to the study, basic self-help skill training programs had been initiated. However, residents still spent approximately 12 hours of their non-sleeping hours in a large dayroom with no structured activities. The supervisors expressed a desire to increase the amount

of informal interactions between the staff and residents while in the dayroom as part of their overall program.

Behavior Definitions

Staff behavior. Dayroom staff were observed on seven categories of behavior, adapted from systems previously utilized by Iwata et al., (1976), Montegar et al. (1977), and Brown, Willis, and Reid (in press).

1. Interactions with group member: The staff member is maintaining physical contact with or talking to a resident who is a member of the target group at times other than resident caretaking. Examples included shaking hands, tickling, swinging, playing with a resident, calling a resident's name, asking a resident a question, etc. Target residents were determined prior to beginning baseline by randomly dividing all residents into three groups of 15 each. Each staff member was then randomly assigned to one of these three groups which then represented his or her target residents.

2. Interaction with other resident: The same as the previous definition, however, pertaining to those residents who are not members of that staff member's target group.

3. Direct care: The staff member is engaged in daily resident care activities such as toileting, providing medical assistance such as seizure care, breaking up fights, cleaning a resident following a toileting accident, clipping a resident's fingernails, brushing a resident's hair, etc.

4. Indirect care: The staff member is engaged in custodial activities that are not directly resident related. Examples include mopping or sweeping the dayroom, picking up trash, repairing broken furniture, re-arranging the furniture in the dayroom, etc.

5. Staff to staff: The staff member is interacting with another staff member and not a resident (e.g., talking between two or more staff members).

6. Off unit: The staff member is not present in the dayroom or the adjoining bath/shower room (e.g., work breaks).

7. No demonstrable activity: The staff member is in the dayroom area but is not engaged in any of the above activities. Examples include standing around or sitting down with no apparent activity, looking out the window, etc.

Resident behavior. Residents were observed according to three categories of behavior:

1. Disruptive: The resident is engaged in self-injurious behavior (e.g., hitting or biting himself), clothes ripping, feces smearing, fighting, hitting, kicking, and throwing furniture or equipment.

2. Self-stimulatory: The resident is engaged in idiosyncratic, stereotyped behavior, such as hand weaving, rhythmic object manipulation, head shaking, and mouthing objects.

3. Other: The resident is not engaged in any of the above behaviors.

Cleanliness.

The cleanliness of the ward was an expressed concern of the ward supervisor, and part of the staff's responsibilities in the dayroom. For this reason, data on resident and dayroom cleanliness were collected throughout the study. The dayroom was divided into two areas using a prominent physical feature of the room as a boundary. These two areas were checked in addition to the adjoining bathroom and shower room along

the following parameters of cleanliness:

1. No puddles: Within the given area there are no puddles of liquid.

2. No feces: Within the given area, feces is not present.

3. No trash: Within the given area, there is no refuse present.

4. No clothes in sink or ledge: Within the given area, no clothing is lying on ledges, in the sink, or on the floor.

5. Toilets flushed: The toilets in the bathroom are free of waste material.

Residents were observed to be either clean (no feces or urine present on them physically or their clothing) or soiled (opposite of clean).

Observers

Observers included the ward supervisor, administrative assistant to the supervisor, practicum students assigned to the project, and the experimenter. The administrative assistant was not informed of the experimental purpose or the occurance of the experimental manipulations. The student observers did not participate until approximately one third of the project had elapsed and were not informed of the experimental purpose or manipulations.

Observer training included reading the definitions and examples, question and answer periods with the experimenter, and practice observing with feedback from the experimenter at other times than the actual study. Observers were required to achieve perfect agreement with the experimenter on 10 consecutive observations prior to observing during the study. The training period generally lasted three days.

Observations.

Staff. Observational data were collected from 9:00 to 11:30 and 1:30 to 2:30 each weekday. These times were chosen as they were the only times during the day shift when other interfering activities were not going on (e.g., meals). Utilizing a variable time (VT) 15 minute time sampling procedure (Powell, Martindale, & Kulp, 1975), 14 observations were made each day. The time between observations varied, averaging 15 minutes across each day. Five such schedules were generated to correspond to each weekday. The specific staff members observed varied each day depending on the staff assigned by the regular work schedule to the dayroom duty. An observer entered the nursing station, observed the staff member for a maximum of five seconds through a plexi-glass window, and recorded the first behavior they observed. If the staff member could not be seen, the observer entered the dayroom and looked for the staff member, according to a predetermined route through the dayroom. In the event of a staff-resident interaction, the resident's behavior was also scored.

Dayroom. Cleanliness data for the dayroom were collected at 9:00, 10:00, 11:00, and 2:00 each weekday. Observers entered the dayroom at one end and checked the first designated area, followed by the second area, the bathroom, and the shower room for the presence of feces, urine, trash, and clothing as described previously. The observers scored each area for the appropriate categories before moving on to the next area.

Residents. Ten lists of 10 randomly selected residents were generated and randomized. These lists were then made an integral part of the dayroom data sheet. After collecting dayroom data, observers

observed the residents listed on the particular sheet one at a time, their behavior, and whether or not they were clean (i.e., absence of urine or feces in their clothing).

Reliability

Staff. Reliability checks were made by two observers independently and simultaneously observing the same staff member. At a given hand signal by the primary observer, observations were begun through one window of the nursing station. After five seconds, and on a similar cue, observations were switched to the next window. After observations were over, data sheets were scored independently. Inter-observer agreement was calculated for each behavior category by dividing the number of agreements as to the occurance of a behavior by the number of agreements plus disagreements on scoring. An agreement was counted if both observers scored the same behavior category during the same observation. Each scoring discrepancy between the two observers was counted as two disagreements.

Dayroom/Resident. Reliability checks were made by two observers independently and simultaneously observing the dayroom, bathroom, shower room, and residents, following the previously mentioned route through the dayroom together. Reliability was defined as in the staff observations.

Procedures

Baseline. Staff members were informed during a weekly meeting at the beginning of baseline that observations would be made of dayroom interactions and cleanliness. Assurance was provided that the data collected would not be used for personnel evaluative purposes and that it would be available to them at any time if they so desired. Throughout baseline, staff engaged in their usual dayroom responsibilities which

included maintaining the cleanliness of the area, maintaining the cleanliness of the residents, general social interactions with the residents, escorting residents to and from the bathroom, and general supervision of all resident activities. There were always two staff members working in the dayroom at a given time. The assignment of persons to the dayroom was determined by the shift supervisor, independent of the study, and was generally based on a rotating schedule among the staff (allowing for absences, days off, etc.).

Self-recording. The staff were told at a weekly meeting at the beginning of the self-recording condition that a new procedure would be instituted in the dayroom, requiring them to keep a record of their interactions with specific residents. They were further told that these records would be placed in the resident's file, serving as an indication of the amount of social interaction each resident received. They were once again assured that the data collected would not be used for evaluative purposes, and would be available to them upon request. A sample recording card was displayed.

When an individual staff member was placed on intervention, in addition to the meeting with all staff, a meeting was held with the ward supervisor, the experimenter, and the staff member. During this time the staff member was given a self-recording card specifying the 15 residents for whom (s)he would record interactions. (S)He was instructed to interact with each resident a criterion number of times. Because the observed time in the dayroom was either one and one half or two hours, the criteria set were four and five interactions respectively. These numbers were chosen such that four and five 30 second interactions would take one third of the time spent in the dayroom with the self-recording

card. It was further explained that the criterion was only a guide, and therefore flexible. The staff were told that direct care activities were still a priority. Examples of interactions were also given, questions were answered, and the staff member was instructed to hand in the card when the shift was over.

When the card was handed in, the staff member was thanked by the ward supervisor, and/or experimenter for performing the self-recording behavior. Special care was taken to insure that the praise was not contingent upon staff-resident interactions.

For subsequent dayroom shifts, the staff members were given the self-recording card by the ward supervisor or experimenter; the card was returned by the staff member at the end of the dayroom shift.

Experimental Design

A multiple baseline design (Baer, Wolf, & Risley, 1968) was used in which the self-recording condition was introduced sequentially across eight staff members.

Follow-up

Follow-up data was collected at one and two month intervals after the termination of the reaearch to determine degree of behavior maintenance. Data was collected in a similar fashion as during the baseline and self-recording conditions

CHAPTER III

RESULTS

Reliability

Staff. A total of 463 individual reliability checks were made, representing 36% of the total number of observations made. Mean inter-observer agreement was calculated for each staff behavior category. The results were: interaction with group member - 100% (92 checks, 0 disagreements); interaction with other - 92% (25 checks, 2 disagreements); direct custodial activity - 93% (116 checks, 8 disagreements); indirect custodial activity - 93% (110 checks, 8 disagreements); staff to staff interactions - 95% (20 checks, 1 disagreement); no demonstrable activity - 90% (90 checks, 9 disagreements); not present in dayroom - 100% (10 checks, 0 disagreements).

Cleanliness/Resident Behavior. Twenty-two reliability checks were made with a total of 686 individual items, representing 40% of the total number of cleanliness and resident behavior items scored. Overall reliability was 94.5% (38 disagreements) with a range of 80% - 100%.

Staff Behavior

Figure 1 shows the effect of self-recording of social interactions by the dayroom personnel on rate of interactions. Immediate increases in rate of interaction occured as self-recording was implemented for each of seven staff members. During baseline, interactions were observed at an average rate of .07 per observation (range = .02 to .16) for all staff members. During self-recording, the average rate of interactions increased to .54 per observation (range = .34 to .66). The increased

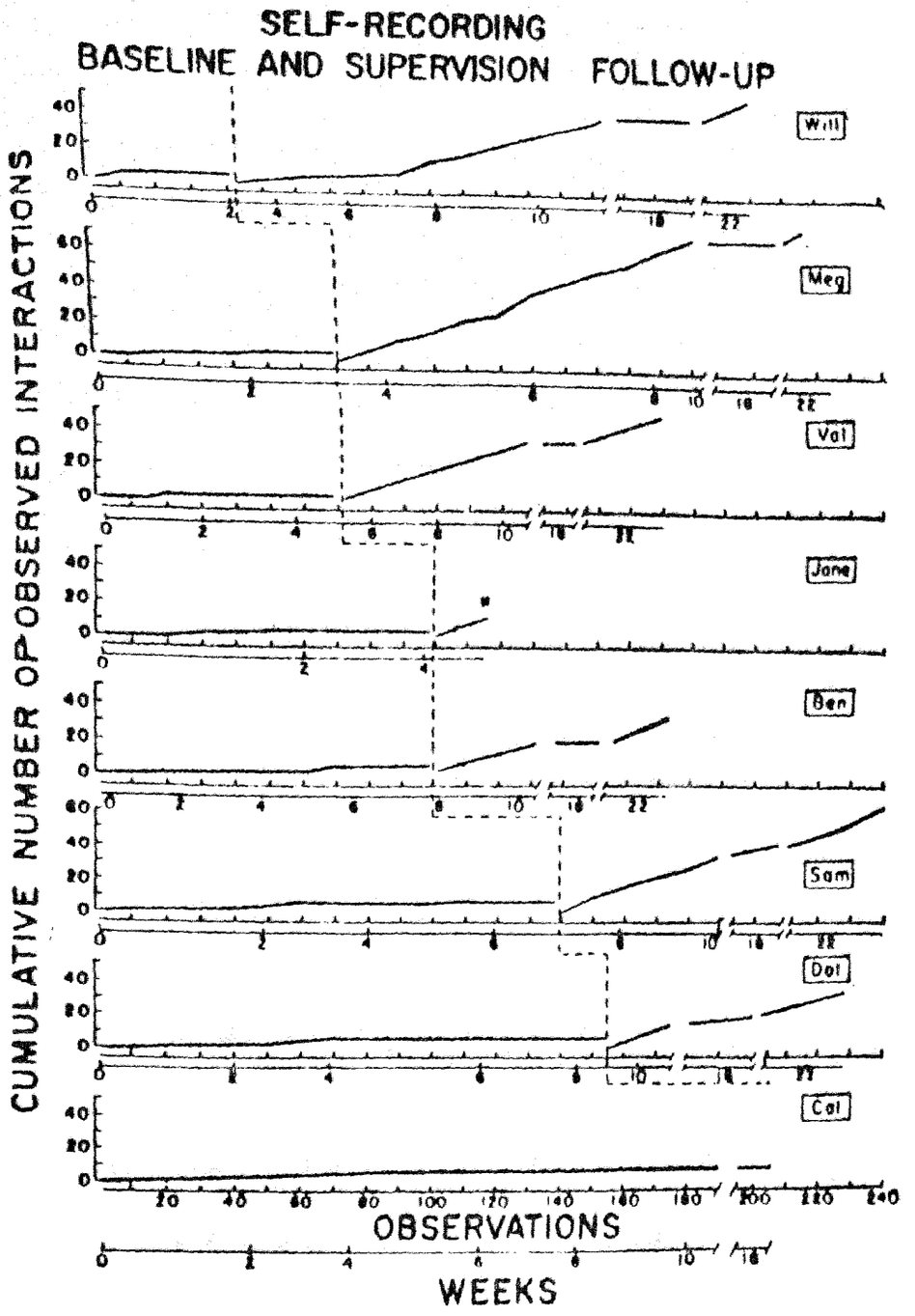

Figure 1 Cumulative social interactions observed for each staff member during baseline, self-recording, and follow-up. In each case the first abscissa represents observations the second abscissa represents weeks.

rate of interaction was found to occur only during the self-recording condition.

Percent behavior was analyzed as a function of the number of staff in the dayroom self-recording. At any time, either none, one, or two of the staff members present could be performing this behavior. Figure 2 shows the percent of behavior observed for the interaction and no demonstrable activity categories. With neither of two staff members self-recording, interactions accounted for 7.12% of observed behavior. Interactions increased to 34.40% with one staff member self-recording, and 54.40% with two staff members self-recording. Conversely, no demonstrable activity decreased to 23.75% and 9.00% respectively, from 38.80%. For each staff member, no demonstrable activity increased as interactions increased.

Further analysis of the data found the increased rate of interactions to be selective. While only 13% of 52 baseline interactions were with residents who were part of the staff member's target group (IG), 92% of 240 self-recording interactions were with this group. The staff members interacted more with those residents listed on their self-recording card during the self-recording condition than during the baseline condition.

Resident Behavior

As self-recording was implemented, resident behavior appeared to change. Figure 3 shows the relationship between resident disruptive behavior and self-stimulatory behavior to the number of dayroom staff self-recording. When neither of two staff members were self-recording, 40.5% of observed resident behavior came under these categories. This dropped to 35.9% when one staff member was self-recording, and 31.0%

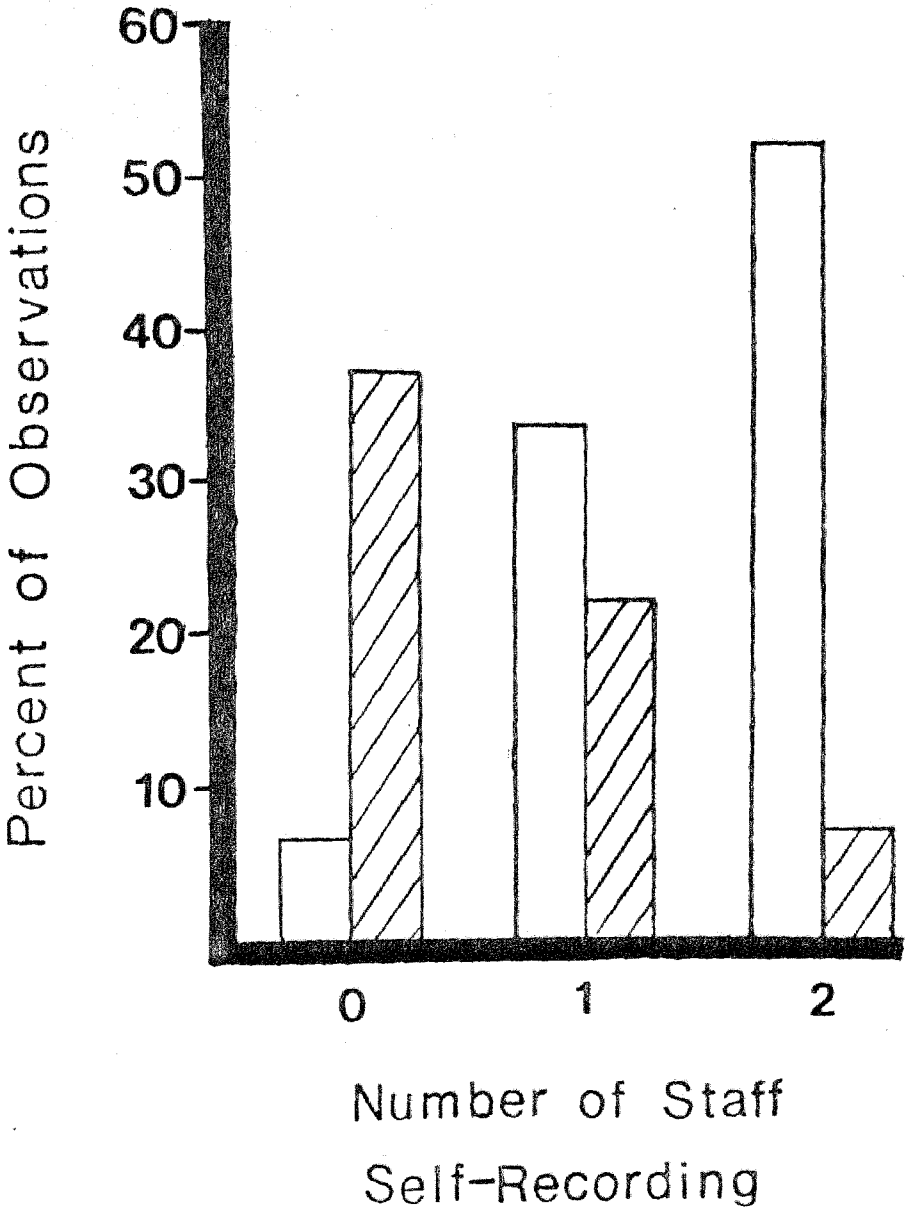

Figure 2 Percent of interactions (clear) and no demonstrable activity (shaded) behaviors observed as a function of 0, 1, and 2 out of 2 staff members self-recording.

when both staff members were self-recording. There was a greater change in resident behavior as the number of personnel self-recording in the dayroom increased.

Cleanliness

An increase in resident and dayroom cleanliness occured during the self-recording condition. The percentage of residents found clean increased from 93.0% to 95.5% and 98.6%, while dayroom cleanliness increased from 71.0% to 73.6% and 78.5% when the number of staff self-recording in the dayroom increased from zero to one and two respectively (see Figure 4). As the number of staff members self-recording in the dayroom increased, resident and dayroom cleanliness increased.

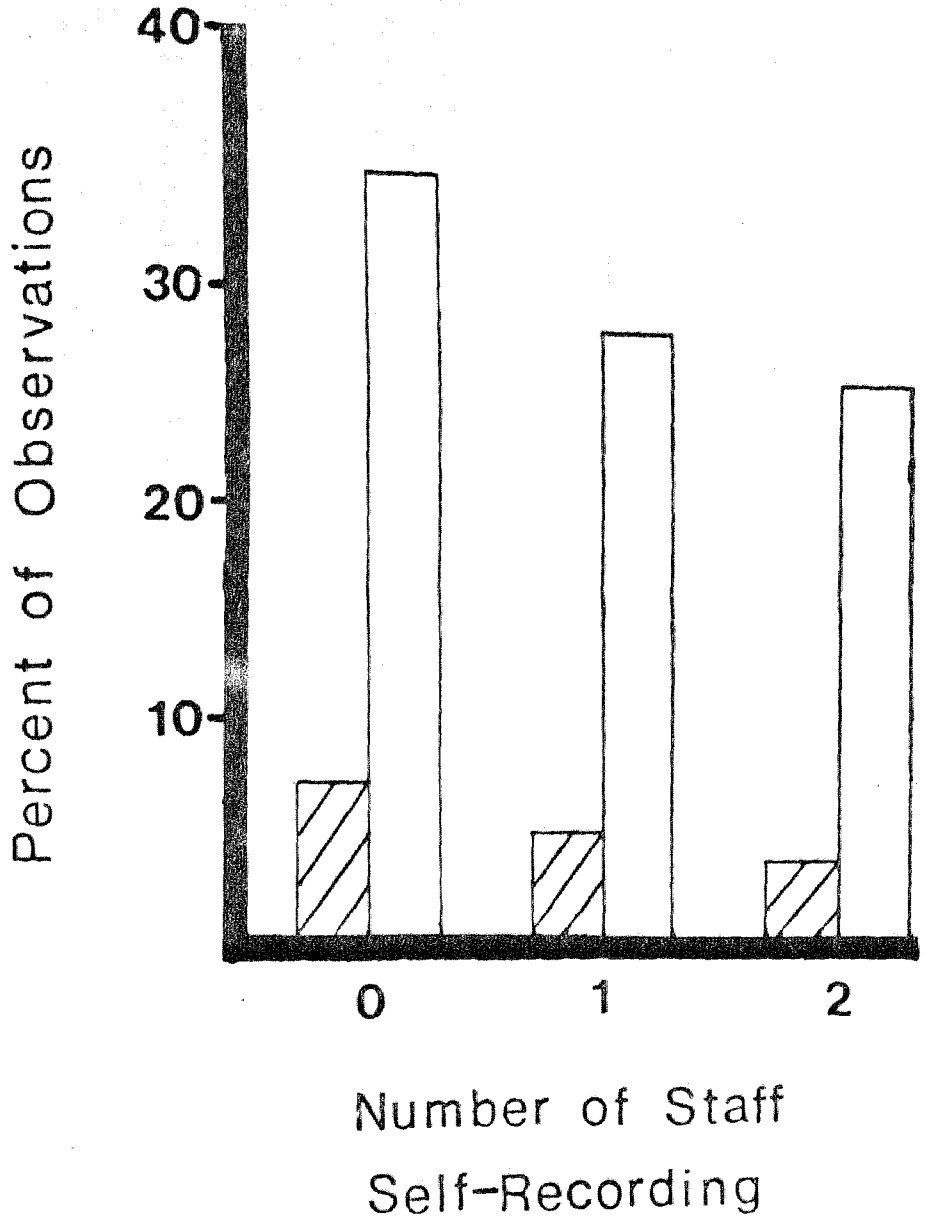

Figure 3 Percent of resident disruptive/aggressive (shaded) and self-stimulatory behaviors observed as a function of 0, 1, and 2 out of 2 staff members self-recording.

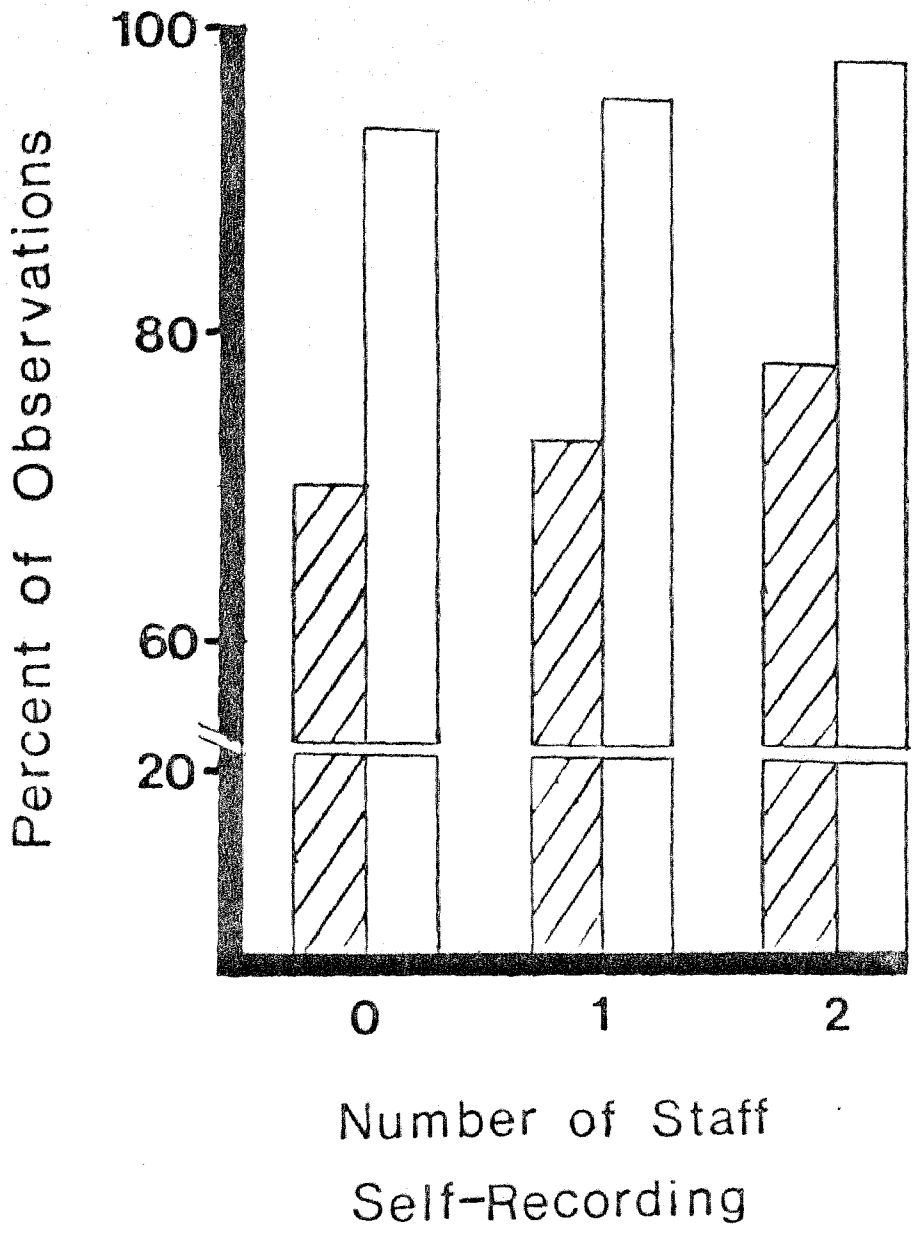

Figure 4 Percent of residents (shaded) and dayroom areas (clear) found clean as a function of 0, 1, and 2 out of 2 staff members self-recording.

CHAPTER IV

DISCUSSION

The results demonstrated that staff self-recording of interactions with residents is an effective technique for increasing staff-to-client interactions. Substantial increases were found in the number of social interactions between staff and residents, with concurrent decreases in no demonstrable activity by staff. The staff members present in the dayroom varied with each shift, thereby varying the number of people in the dayroom who were self-recording. However, both the individual data and the group staff data supported the effectiveness of the procedure. Interactions were found to increase as a function of self-recording, regardless of whether or not the other staff member in the dayroom was self-recording.

The monetary cost of self-recording is negligable; the only investment involved is for the apparatus itself. In addition, the time cost involved is relatively low. The procedure involves minimal time by the observer (for spot reliability checks), while the self-recording of a behavior on the part of the recorder takes no more than a few seconds. Therefore, self-recording is also an efficient technique for changing staff behavior. This is in contrast to contingencies utilizing money (Katz et el., 1972; Martin, 1972; Patterson et al., 1976; Pomerleau et al., 1973; Pommer & Streedback, 1974), trading stamps (Bricker et al., 1972; Hollander & Plutchik, 1972; Hollander et al., 1973), time off from work (Watson, 1972b; Reid et al., in press), and lottery systems (Iwata et al., 1976).

The problems of stimulus control and stimulus generalization found with the use of supervisor feedback are of little concern when using self-recording. Since no apparent external reward is utilized, the stimuli under which behavior change comes to rely are always with the person performing the self-recording response. In addition, self-recording may be applied in any institutional environment with any behavior amenable to self observation (e.g., running training programs, performing custodial duties, dispensing reinforcers).

The results concerning resident behavior lend support to the contention that interactions and activity are beneficial for institutionalized residents (Quilitch, 1975). While the change in data concerning resident behavior is not of the magnitude of those concerning staff-to-resident interactions, the data do indicate a systematic decrease in resident disruptive, and self-stimulatory behaviors. These findings corroborate those of Berkson and Mason (1963) and Moseley, Faust, and Reardon (1970) who found stereotypical institutional behaviors to be incompatible with socially useful behaviors (e.g., social interacting).

The concern regarding the possible decrease in cleanliness that might have resulted from time being taken away from custodial duties was not supported. On the contrary, the results suggest that increasing interactions brought about a small increase in resident and dayroom cleanliness. One possible explanation for these data relates to the time the staff spent in contact with each resident. Since this time increased directly as interactions increased, the staff may have been in a better position to quickly notice and therefore clean a soiled resident.

The means utilized for the application of a multiple baseline

design to a ward environment also presents a significant addition to the body of applied research. Both institutional and industrial settings are usually characterized by eight hour shifts and staggered days off. This scheduling presents a problem when conducting research in such an environment. By basing the change in condition on the stability and magnitude of the baseline data and the number of baseline observations, regardless of the amount of time or number of days represented, and by collecting data whenever the particular staff member was in the dayroom during a weekday, this problem was alleviated. While the result was unequal accumulations of data per staff member over equal amounts of chronological time, this did not present a problem. The effectiveness of self-recording was still clearly demonstrated.

The collection of follow-up data presents another addition to methodology in this area of research. This data indicated levels of interaction significantly above baseline levels, though lower than the levels found during the investigation. This may be attributed to several changes that occured during the first half of follow-up data collection. The onset of a weeklong heat wave brought about a change in the environment. The residents were shifted from the dayroom to a smaller area in the air-conditioned dormitory, necessitating a change in custodial routine. In addition, there was during this time a change in the ward manager. The decrement in interactions prompted further analysis of the follow-up data. This analysis found a distinct differential between the first half and second half of follow-up. The first half was characterized by a lowered rate of self-recording responses associated with a lowered rate of interactions. The second half of follow-up was characterized by corresponding increase in both of these measures. This lends support

to the given possible reasons for the drop in interactions, as well as further demonstrating the control exerted by the independent variable.

The change in resident behavior represented a decrease in undesirable behavior of approximately 9%. Though this may be interpreted as small, several things must be remembered. At no time were ward staff instructed to make their interactions contingent upon "appropriate" resident behavior. In addition, this change occured without any corresponding change in physical environment. It remained an unstructured dayroom characterized by sparse furnishings and few manipulable objects. The only change in the environment was an increase in social interactions.

Directions for further research are suggested by the above mentioned difficulties. In the future, those investigating self-recording might attempt to maintain a constant environment so as to control for changes in weather and supervision. More important, future research should investigate the effects of interactions contingent upon specified behavior classes identified as desirable for institutionalized residents.

Additional research suggestions may also be found by examining the interaction between staff behavior change and resident behavior change. A complex reciprocal interaction exists between the individual and the environment (Goldiamond, 1965). The question for future researchers to investigate therefore is the role changed resident behavior has on maintaining the change in staff behavior.

REFERENCE NOTE

1. Iwata, B.A. Attendant training in institutional settings. Unpublished manuscript, Florida State University, 1974.

REFERENCES

Ayllon, T., & Azrin, N. The token economy. New York: Appleton-Century-Crofts, 1968.

Baer, D. M., Wolf, M. M., & Risley, T. R. Some current dimensions of applied behavior analysis. Journal of Applied Behavior Analysis, 1968, 1, 91-97.

Berkson, G., & Mason, W. Stereotyped movements of mental defectives: III. Situation effects. American Journal of Mental Deficiancy, 1963, 68, 409-412.

Bernsberg, G. C., & Barnett, C. D. Attendant training in southern residential facilities for the mentally retarded. Atlanta: Southern Regional Education Board, 1966.

Blatt, B. Exodus from pandemonium. Boston: Allyon and Bacon, 1970.

Bricker, W. A., Morgan, D. G., & Grabowski, J. G. Development and maintenance of a behavior modification repertoire of cottage attendants through T. V. feedback. American Journal of Mental Deficiancy, 1972, 77, 128-136.

Bristol, M. M., & Sloane, H. N., Jr. Effects of contingency contracting on study rate and test performance. Journal of Applied Behavior Analysis, 1974, 7, 271-285.

Broden, M., Hall, R. V., & Mitts, B. The effects of self-recording on the classroom behavior of two eighth-grade students. Journal of Applied Behavior Analysis, 1971, 4, 191-199.

Brown, K., Willis, B. S., & Reid, D. H. Differential effects of supervisor verbal feedback and approval on institutional staff performance. Behavior Therapy, in press.

Cochran, I. L., & Steiner, K. E. Evaluation of an in-service training program using SREB Information Test. American Journal of Mental Deficiancy, 1966, 70, 193-197.

Daily, W. F., Allen, G. J., Chinsky, J. M., & Viet, S. W. Attendant behavior and attitudes toward institutionalized children. American Journal of Mental Deficiancy, 1974, 78, 586-591.

Donaldson v. O'Connor, 463 F. 2d. 507 (5th Cir. 1974).

Gardner, J. M. Behavior modification in mental retardation: A review of research and analysis of trends. In R. D. Rubin, H. Fensterkein, A. A. Lazarus, and C. M. Franks (Eds.), Advances in behavior therapy. New York: Academic Press, 1971.

Gardner, J. M. Selection of non-professionals for behavior modification programs. American Journal of Mental Deficiancy, 1972, 76, 680-685. (a)

Gardner, J. M. Teaching behavior modification to non-professionals. Journal of Applied Behavior Analysis, 1972, 5, 517-521. (b)

Glynn, E. L., Thomas, J. D., & Shee, S. M. Behavioral self-control of on task behavior in an elementary classroom. Journal of Applied Behavior Analysis, 1973, 6, 105-113.

Goldiamond, I. Self-control procedures in personal behavior problems. Psychological Reports, 1965, 17, 851-868.

Gottman, J. M., & McFall, R. M. Self-monitoring effects in a program for potential high school dropouts. Journal of Consulting and Clinical Psychology, 1972, 39, 273-281.

Herbert, E. W., & Baer, D. M. Training parents as behavior modifiers: Self-recording of contingent attention. Journal of Applied Behavior Analysis, 1972, 5, 139-149.

Hollander, M. A., & Plutchik, R. A reinforcement program for psychiatric attendants. Journal of Behavior Therapy and Experimental Psychiatry, 1972, 3, 297-300.

Hollander, M. A., Plutchik, R., & Horner, V. Interaction of patient and attendant reinforcement programs: The "piggy-back" effect. Journal of Consulting and Clinical Psychology, 1973, 41, 43-47.

Iwata, B. A., Bailey, J. S., Brown, K., Foshee, T. J., & Alpern, M. A performance based lottery to improve residential care and training by institutional staff. Journal of Applied Behavior Analysis, 1976, 9, 417-431.

Kanfer, F. Self-monitoring: Methodological limitations and clinical applications. Journal of Consulting and Clinical Psychology, 1970, 35, 148-152.

Katz, R. C., Johnson, C. A., & Gelfand, S. Modifying the dispensing of reinforcers: Some applications for behavior modification with hospitalized patients. Behavior Therapy, 1972, 3, 579-588.

Kazdin, A. E. Issues in behavior modification with mentally retarded persons. American Journal of Mental Deficiancy, 1973, 78, 134-140.

Kazdin, A. E. Self-monitoring and behavior change. In M. J. Mahoney & C. A. Thoreson (Eds.), Self-control: Power to the person. Monterey, California: Brooks/Cole, 1974

Martin, G. L. Teaching operant technology to psychiatric nurses, aides, and attendants. In F. W. Clark, D. R. Evans, and L. A. Hammerlynck (Eds.), Implementing behavioral programs for schools and clinics. Champaign, Ill.: Research Press, 1972.

McKenzie, Y. L., & Rushall, B. S. Effects of self-recording on attendance and performance in a competitive swimming training environment.

Journal of Applied Behavior Analysis, 1974, 7, 199-206.

Montegar, C. A., Reid, D. H., Madson, C. H., & Ewell, M. D. Increasing institutional staff to resident interactions through in-service training and supervisor approval. Behavior Therapy, in press.

Moseley, A., Faust, M., & Reardon, D. Effects of social and non-social stimuli on the stereotyped behaviors of retarded children. American Journal of Mental Deficiancy, 1970, 74, 808-811.

New York State Association for Retarded Children v. Rockefeller, 357 F. supp. 752 (E.D.N.Y. 1973).

Panyon, M. C., Boozer, H., & Morris, M. Feedback to attendants as a reinforcer for applying operant techniques. Journal of Applied Behavior Analysis, 1970, 3, 1-4.

Panyan, M. C., & Patterson, E. T. Teaching attendants the applied aspects of behavior modification: An empirical approach. Mental Retardation, 1974, 12, 30-32.

Patterson, E. T., Griffin, J. C., & Panyan, M. C. Incentive maintenance of self-help skill training programs for non-professional personnel. Journal of Behavior Therapy and Experimental Psychiatry, 1976, 7, 249-253.

Pomerleau, O. F., Bobrove, P. H., & Smith, R. H. Rewarding psychiatric aides for the behavioral improvement of assigned patients. Journal of Applied Behavior Analysis, 1973, 6, 383-390.

Pommer, D. A., & Streedback, D. Motivating staff performance in an operant learning program for children. Journal of Applied Behavior Analysis, 1974, 7, 217-221.

Powell, J., Martindale, A., & Kulp, S. An evaluation of time sample measures of behavior. Journal of Applied Behavior Analysis, 1975, 8, 463-469.

Quilitch, H. R. A comparison of three staff-management procedures. Journal of Applied Behavior Analysis, 1975, 8, 59-66.

Reid, D. H., Schuh-Wear, C. L., & Brannon, M. E. Use of a group contingency to decrease staff absenteeism in a state institution. Behavior Modification, in press.

Report to the President: United States Panel on Mental Retardation. Washington, D. C.: U. S. Government Printing Office, 1974.

Rivera, G. Willowbrook: A report on how it is and why it doesn't have to be that way. New York: Vintage, 1972.

Watson, L. S., Jr. How to use behavior modification with mentally retarded and autistic children: Programs for administrators, teachers, parents, and nurses. Libertyville, Ill.: Behavior Modification Technology, 1972. (a)

Watson, L. S., Jr. The use of contingent reinforcement for training staff members and parents working with autistic and mentally retarded children. In D. A. Primrose (Ed.), Proceedings of the Second Congress of the International Association for the Scientific Study of Mental Deficiancy. Amsterdam, Sweden: Swetz and Zeittinger, 1972. (b).

Watson, L. S., Jr., Gardner, J. M., & Sanders, C. Shaping and maintaining behavior modification skills in staff members in an MR institution: Columbus State Institute behavior modification program. Mental Retardation, 1971, 9, 39-42.

Welsh, W. V., Ludwig, C., Radiker, J. E., & Krapfl, J. E. Effects of feedback on daily completion of behavior modification projects. Mental Retardation, 1973, 11, 24-27.

Willems, E. P. Behavioral technology and behavioral ecology. Journal of Applied Behavior Analysis, 1974, 7, 151-165.

Wyatt v. Stickney, 344 F. Supp. 373, 344 F. Supp. 387 (M. D. Ala. 1972) aff'd sub nom. Wyatt v. Aderholt, 503 F. 2d. 1305 (5th Cir. 1974).